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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/695,591

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Paul Jayachandran Joseph

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EXAMINER

CULBERT, ROBERTS P

ART UNIT

PAPER NUMBER

1763

DATE MAILED: 04/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/695,591

Applicant(s)

JOSEPH ET AL.

Examiner

Roberts Culbert

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1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 18,19,21-26 and 28-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18,19,21-26 and 28-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/5/06 has been entered.

### ***Response to Arguments***

Applicant's arguments with respect to the Babich reference have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**Claims 18, 19, 21-26, and 28-31 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,610,593 to Kohl et al.**

Regarding Claims 18 and 23, and referring to Figures 7A-H, Kohl et al. teach a method of fabricating a microstructure comprising providing a substrate having a sacrificial polymer layer (140)

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disposed thereon, disposing a framing material (144) onto at least a portion of the sacrificial polymer layer, disposing an overcoat layer (146) onto the framing material, wherein the overcoat layer is selected from polynorborenes, epoxides, polyarylenes, ethers parylenes and combinations thereof, (and wherein the framing material substantially separates the sacrificial layer from the overcoat layer and covers portions of the sacrificial layer that would otherwise contact the overcoat layer, and removing the sacrificial layer by thermal decomposition to form an air region within the area defined by the sacrificial material. (Figure 7G)

Regarding Claim 19, Kohl et al. illustrates that the removing the sacrificial layer defines an air region within the overcoat layer the framing material engaging the air region on an inside surface and engaging the overcoat layer on the outside surface.

Regarding Claims 21, the dielectric framing material is selected from  $\text{SiO}_2$ ,  $\text{Si}_3\text{N}_4$ , and  $\text{SiO}_x\text{N}_y$ . (Col. 16, Lines 4-12)

Regarding Claim 24, Kohl teaches that the sacrificial materials are selected from polynorborenes and polycarbonate polymers (Col. 5, Lines 9-13) and may be the same or different, (Col. 21, Lines 45-48) which reads on the use of *solvent incompatible* materials as broadly claimed.

Regarding Claims 22 and 26, the sacrificial layer is selected from thermally decomposable types such as polynorborenes. (Col. 13, Lines 63-67)

Regarding Claim 28, the step of removing the sacrificial polymer comprises heating at least a portion of the microstructure to the decomposition temperature of the sacrificial polymer.

Regarding claim 25, Kohl et al. illustrates that the framing material forms a barrier between the sacrificial layer and the overcoat layer and maintains the structural integrity of the air region. Further, Kohl et al. teaches curable polymers for the overcoat layer, and teaches curing (Col. 9, Lines 58-61) after depositing by spin coating, for example. (Col. 19, Lines 40-46)

Regarding Claim 30, Kohl et al. teaches that thermal diffusion products may diffuse through the overcoat layer leaving a residue free hollow structure. (Col. 22, Lines 21-30)

Regarding Claim 31, Kohl et al. teaches thermal decomposition at 200-425°C. (Col. 7, Lines 12-16)

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**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberts Culbert whose telephone number is (571) 272-1433. The examiner can normally be reached on Monday-Friday (8:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



R. Culbert  
Examiner  
Art Unit 1763



Parviz Hassanzadeh  
Supervisory Patent Examiner  
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